

develop a permanent interest in the small plain instrument the biologist is asking for is a financial one. That there is an inclination to meet the rising demand is evident from the circular of inquiry sent out by Queen & Co. last year, from the construction of the "Harvard" stand by Bausch & Lomb Optical Co., which embraces some features of the foreign models, from the similar stand just put in the market by Bulloch, and from the tone of the replies already made to Dr. Minot's article. The old prejudice against American instruments, because American, has nearly passed away, and the investigator is now likely to buy where he can best and most easily meet his needs. On the other hand, if the instrument-maker will lay aside his prejudices against a plain instrument of superior workmanship, there will not long be grounds for accusation and controversy.

OPEN LETTERS.

Mutilation of flowers by insects.

On page 111, 1887, of the GAZETTE I suggested that botanists note all cases in which insects mutilate flowers for the purpose of securing the nectar; and that the insects be captured, and their scientific names be published with such notes. Professional duties have made it impossible for me to give much time to this class of observations, but have the following notes which may be of some value. I found that a majority of the corollas of a large number of plants (examined in several localities) of *Physostegia Virginiana* and *Mertensia Virginica* were slitted as described in the GAZETTE for October, 1886 and May, 1887. The only insect which I found doing this work was *Bombus Pennsylvanicus*. For nearly two months, during the past summer, I had under observation two large vines of two species of honeysuckle. In the first, the common woodbine, the corolla is deeply cleft, with the lips well turned back. This plant is deliciously fragrant, and, to my surprise, the only insects which visited it belong to the genus *Halictus*, apparently all the same species. All entered at the open mouth of the corolla. The flowers are proterandrous. In the second, the trumpet or coral honey-suckle, the mouth of the corolla is small and the short divisions not reflected. It is also proterandrous. This species was abundantly visited by the leaf-cutter or upholster bee (*Megachile brevis*), and one or more species of *Halictus*.¹ The leaf-cutter bee never enters the mouth of the corolla, but goes directly to the base, and shears out a round piece, usually near one-eighth inch in diameter; through this it extracts the sweets. It is sometimes necessary to make two or three openings before it gets to the right place. This operation is done as easily and quickly as one could do it with sharp scissors. In the majority of instances the piece cut out is allowed to hang by a little hinge at one side. Through this circular opening the *Halictus* enters and makes a more thorough search for the remaining honey.

¹ These small insects are commonly known as "sweat bees," from their habit of alighting on one's person while sweating freely and sucking up the perspiration. Mr. C. M. Weed, of the Ill. State Laboratory, kindly identified the insects for me.

In case the flower has not been visited by a Megachile the Halictus goes to the mouth of the corolla and enters in the usual way; but it usually alights on the base first and hunts for the artificial opening.

Mt. Carmel, Ill.

J. SCHENCK.

An acknowledgment.

In the correcting of the proof of the paper on the ostrich fern, noticed in the GAZETTE for December, a paragraph stating under what conditions the investigations were made was inadvertently omitted. The work was done under the supervision of Professor V. M. Spalding, of the University of Michigan, to whom the author begs to offer this somewhat tardy expression of his thanks for the valuable assistance and encouragement received from him during the pursuance of the work.

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CURRENT LITERATURE.

Flowers and fruit of *Sparganium* and *Typha*.¹

In this monograph Dr. Dietz has given the results of a comparative study of the development of the floral and fruit structures of *Sparganium* and *Typha*. It is a good model of those studies which are necessary before botanists can speak with any definiteness upon the relationships of plants; studies which should be greatly multiplied, and which furnish a vast and useful field of labor for our ever increasing army of botanists. Taking a group of doubtful relationships, the author has laid the foundation for a rational discussion of the subject, which he promises at some subsequent time. The vegetative structures are mostly alike, but the reproductive organs show notable differences. A radical difference occurs in the positions of the flowers themselves, those of *Sparganium* occurring upon secondary and tertiary axes, while those of *Typha* are upon primary and secondary axes. Every detail in the development of the floral parts is described and figured with that minuteness that seems to leave none of the anatomical details unrecorded. The greatest differences are found in the structures of the pistil, the most apparent of which is its bicarpellary character in *Sparganium*, and monocarpellary character in *Typha*. The formation of the integuments of the seed also differs widely. In conclusion, the author considers that, while there are enough characters in common to justify retaining these two genera in one order for the present, the differences are sufficient to indicate that there may be ordinal characters. This structural study shows that *Sparganium* is nearest to the *Pandaneæ*, while *Typha* shows relationships to the *Aroideæ*.

¹ DIETZ, DR. SANDOR.—Ueber die Entwicklung der Blüthe und Frucht von *Sparganium* Tourn. und *Typha* Tourn. (Bibliotheca botanica, heft 5.) 60 pp., 3 plates. 4to. Cassel: Theodor Fischer, 1887.—8 marks.